

**RESPONSE TO REJECTION OF CLAIMS 1-20****STATEMENT OF APPLICABLE LAW**

In determining the obviousness of an invention, the framework established by the Supreme Court, namely:

- (1) determining the scope and contents of the prior art,
- (2) ascertaining the differences between the prior art and the claims in issue, and
- (3) resolving the level of ordinary skill in the pertinent art,

must be followed. *Graham v. John Deere*, 383 U.S. 1, 148 U.S.P.Q. 459 (1966). In applying the *Graham* factors, an examiner must apply the following tenets:

- (A) the claimed invention must be considered as a whole;
- (B) the references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;
- (C) the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and
- (D) reasonable expectation of success is the standard with which obviousness is determined.

*Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 U.S.P.Q. 182, 187 n.5 (Fed. Cir. 1986); M.P.E.P. §2141.

To reject claims of an application under 35 U.S.C. § 103(a), an examiner has the burden of establishing an unrebutted *prima facie* case of obviousness. To establish a *prima facie* case of obviousness, a patent examiner must show: (1) a suggestion or motivation to modify and/or combine the references, (2) a reasonable expectation of success, and (3) the prior art must teach or suggest all the limitations of the rejected claim. *In re Vaack*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991), *see also*, M.P.E.P. §§2142-3. *See In re Deuel*, 51 F.3d 1552, 1557, 34 U.S.P.Q.2d 1210, 1214 (Fed. Cir. 1995). In the absence of a proper *prima facie* case of obviousness, an applicant who complies with the other statutory requirements is entitled to a patent. *See In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992).

That references can be combined or modified, without a suggestion of the desirability of such combination and/or modification, does not support an obviousness rejection. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990). "The level of skill in the art cannot be relied upon to provide the suggestion to combine references." M.P.E.P. § 2143.01 (citing *Al-Site Corp. v. VSI Int'l*

*Inc.*, 174 F.3d 1308, 50 U.S.P.Q.2d 1161 (Fed. Cir. 1999)). In other words, the absence of an objective suggestion to combine in the prior art references is dispositive of an obviousness determination. See *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1578-79, 42 U.S.P.Q.2d 1378, 1383 (Fed. Cir. 1997).

Furthermore, the motivation to modify or combine the teachings of the prior art must be identified in making and sustaining an obviousness rejection. See *In re Rouffet*, 149 F.3d 1350, 47 U.S.P.Q.2d 1453 (Fed. Cir. 1998) (reversing an obviousness rejection for lack of identification by the Examiner and the Board of motivation to combine prior art references).

Rejection of claim 3 under 35 U.S.C. § 112, second paragraph

Claim 3 is rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as his invention. Specifically, the Examiner has noted that there is no antecedent basis for the limitation “the fasteners” in line 1. Applicant has amended the relevant claim to have proper dependency and respectfully submits the claim is now in condition for allowance.

Rejection of claims 1-10 under 35 U.S.C. § 103(a)

Claims 1-3, 8-13, 22, 27 and 28 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,310,277 (“*Uotila*”). Applicant has reviewed the cited reference and the Examiner’s rejection and respectfully disagrees that the reference anticipates the invention of claims 1-3, 8-13, 22, 27, and 28, as amended.

In support of this rejection, the Examiner stated:

Regarding claims 1, 10, and 22, *Uotila* discloses a method and device for impeding motion of a land vehicle comprising:

- A net (or means for receiving and retaining the moving body), seen as net (1) in Figs. 1, 4, and 5
- Anchors (or means for anchoring the receiving and retaining means), seen as anchors (3) in Figs. 1 and 4
- a flexible strip arranged to secure the net to the anchors (or means for decelerating the moving body in a controlled manner), seen as brakes (4, 5) in Figs. 1 and 4-7, which are described by *Uotila* as discardable fabric brakes

formed of one or several ribbons which have been woven or stitched together over a certain length, so that ribbons are forced to be torn apart when pulled (*Col. 2, lines 40-65*).

The Examiner further states:

Regarding claim 2, *Uotila* discloses that the brake members are formed of two ribs that have been woven or stitched together over a certain length, and they usually have two ends, on which draw members have been formed. Pulling on the draw members will cause the ribbons to be forced to be torn apart (*Col. 2, lines 40-51*). Therefore, since the stitching breaks first, tearing apart the ribbons, the tensile strength of the stitching must be less than the tensile strength of the ribbons.

Regarding claim 3, *Uotila* discloses that the ribbons forming the fabric brakes have been woven or stitched together over a certain length (*Col. 2, lines 40-51*), therefore the stitched and/or woven portions serving as the fasteners.

Regarding claims 8, 9, 12, 13, 27, and 28, *Uotila* discloses both a non-constant level of deceleration as well as a substantially constant level of deceleration in the action of the braking members (4, 5). *Uotila* notes that the first brake members are open, meaning that in conclusion of their operation the first brake members altogether cease to operate, and release their grip. The second brake members become locked in conclusion of their retarding effect, whereby the braking force increases to great height in the end (*Col. 3, lines 52-61*). Therefore, it appears the first braking members provide a substantially constant level of deceleration, and the second braking members provide a non-constant level of deceleration since the braking force increases to great height in the end.

Regarding claim 11, *Uotila* illustrates means for holding up the receiving means in a vertical position, seen as posts (6) in Figs. 1 and 4.

Each of pending claims 1-3, 8-10, 12-13, 22, 27, and 28, as amended, require a sacrificial panel which is not disclosed or taught by *Uotila*. Furthermore, nothing in *Uotila* suggests the use of a solid panel to hold up the net in a vertical position. Indeed, the use of a solid form, such as claimed in each of these claims is counterintuitive inasmuch as solid forms are perceived of defeating one of the purposes of the invention, to wit, to provide a constant level of deceleration. Nevertheless, the Applicants have found that the sacrificial panel can provide sufficient support while not inducing a significant non-constant rate of deceleration. Accordingly, withdrawal of this rejection is respectfully requested

Rejection of claims 7, 14, 18-21, 25 and 26 under 35 U.S.C. § 103(a)

Claims 7, 14, 18-21, 25 and 26 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Uotila*. In support of this rejection, the Examiner stated:

Rejecting claims 7, 14, 21, 25, and 26, *Uotila* discloses a device for impeding motion of a land vehicle comprising:

- a first barrier, seen as net (1<sup>1</sup>) in Fig. 9.
- a second barrier, seen as net (1<sup>2</sup>) in Fig. 9, positioned alongside the first net, the first row being staggered from the second row (*Col. 3, lines 21-25*).
- a plurality of anchors, seen as anchors (3) in Figs. 1 and 4.
- each barrier comprising a net, seen as nets (1<sup>1</sup>) and (1<sup>2</sup>) in Fig. 9 and one or more flexible strips arranged to secure the net to the anchors, seen as brakes (4, 5) in Figs. 1 and 4-7, which are described by *Uotila* as discardable fabric brakes formed of one or several ribbons which have been woven or stitched together over a certain length, so that ribbons are forced to be torn apart when pulled (*Col. 2, lines 40-65*).

*Uotila* fails to disclose a first row of barriers and second row of barrier positioned end-to-end (claim 14), with each barrier having a male portion and corresponding female portion of a mated joint (claim 21). Yet *Uotila* notes that it is obvious that any number of nets, such as may be considered necessary, can be placed one after the other (*Col. 3, lines 35-37*). The nets are designed for greatest possible cover for use in stopping any passenger car that is in motion on the road (*Col. 4, lines 22-25*). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the staggered nets in Fig. 9 of *Uotila* so there is a row of first and second barriers positioned end-to-end, and each barrier having corresponding male and female portions of a mated joint, since *Uotila* states in *Col. 3, lines 35-37* that it is obvious that any number of nets, such as may be considered necessary, can be placed one after the other, and in *Col. 4, lines 22-25* that the nets are designed for greatest possible cover for use in stopping any passenger car that is in motion on the road. So therefore if you have multiple side-by-side cars approaching the net, a row of barriers would be the logical solution in order to satisfy *Uotila's* desire for the greatest possible cover for use in stopping any passenger car that is in motion on the road, and clearly the barriers would have to be joined by some sort of mated joint. Furthermore, it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 U.S.P.Q. 8.

Applicants have considered the Examiner's rejection under 35 U.S.C. § 103(a) and respectfully disagrees that *Uotila* renders claims 7, 14, 18-21, 25 and 26 obvious. Each of pending claims 7, 14, 18-21, 25 and 26, as amended, require a sacrificial panel which is not disclosed or

taught by Uotila. Furthermore, nothing in Uotila suggests the use of a solid panel to hold up the net in a vertical position. Indeed, the use of a solid form, such as claimed in each of these claims is counterintuitive inasmuch as solid forms are perceived of defeating one of the purposes of the invention, to wit, to provide a constant level of deceleration. Nevertheless, the Applicants have found that the sacrificial panel can provide sufficient support while not inducing a significant non-constant rate of deceleration. Accordingly, withdrawal of this rejection is respectfully requested

Rejection of claims 4-6, 15-17, 23 and 24 under 35 U.S.C. § 103(a)

Claims 4-6, 15-17, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Uotila* in view of U.S. Patent No. 4,780,020 (“Terio”). In support of this rejection, the Examiner states:

*Uotila* fails to disclose a first sacrificial panel, which includes a smooth surface on one side, and a second sacrificial panel, the first and second panels sandwiching the net therebetween. *Terio* teaches a vehicle barrier comprised of I-beam posts with cable therebetween to stop a high speed vehicle (see abstract). The barrier employs panels (40), which would not only make the gate more pleasing to look at but would hide the functioning compounds of the barrier from view to protect the from weather and scrutiny by potential terrorist (*Col. 5, lines 1-5*). Two such panels would be employed between each pair of I-beams, one in front of the cables, one in back, between the cables and webs (2, 3), respectively (*Col. 5, lines 5-8*). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the barrier of *Uotila* to include first and second sacrificial panels sandwiching the net therebetween as taught by *Terio*, since *Terio* states in *Col. 5, lines 108* that the panels would not only make the gate more pleasing to look at but would hide the functioning components of the barrier from view to protect the from weather and scrutiny by potential terrorist, and two such panels would be employed, one in front of the cables, one in back.

Applicants have reviewed the cited references and respectfully disagree that claims 4-6, 15-17, 23 and 24 are obvious over *Uotila* in view *Terio*. As an initial matter, Applicants would like to note that the barrier of *Terio* is geared to “stopping a high speed, heavily loaded vehicle *in its tracks*.” See *Terio*, col. 1, lines 37-40 (emphasis added). *Terio* goes on to distinguish other barriers which permit the “vehicle to pass over or through the barrier a significant distance beyond the

barrier.” See Terio, col. 1, lines 40-43. That is, Terio is unconcerned with the safety of the occupants of the vehicle. Rather, the invention of Terio specifically uses a non-constant rate of deceleration.

In contrast, Applicants’ invention is geared toward providing a method to more slowly decelerate a vehicle so as to prevent injury to the occupants of the vehicle. See Application, page 2, That is, Applicants’ invention is the *antithesis* of that of Terio. To that end, the Applicants’ invention utilizes constant deceleration by way of flexible strips. Furthermore, the sacrificial panel is such as to NOT cause a non-constant deceleration event.

In addition, the use of the aluminum panel in Terio is to hide the unsightly barrier. Because Terio has no concern for safety, a honeycomb aluminum panel, which In contrast, the use of the sacrificial panel of the claimed invention is to hold the net in a vertical position.

Because the goals of the inventions of Applicants and Terio are directly contrary, one of ordinary skill in the art would not look to Terio for means to hold up the net, as claimed. The Examiner asserts that it would have been to use panels as in Terio with the barrier of Uotila in order to protect the from weather and scrutiny by potential terrorist. However, there is no suggestion anywhere in Uotila that the barrier needs to be protected from the weather or scrutiny of terrorists. Thus, the Examiner has failed to show any motivation whatsoever to combine these two references. Indeed, as discussed above, use of a panel, as in Terio, is counterintuitive to the goals of both the present Application and Uotila, which is for the safety of the passengers in the vehicle. That is, the only motivation is the motivation **NOT** to combine these two references. Accordingly, withdrawal of this rejection is respectfully requested.

New Claims 29-32 are dependent upon respective sets of the claims discussed hereinabove and are considered allowable over the cited art for essentially the same reasons provided hereinabove, and further in view of the additional limitations incorporated therein.

Consideration of new independent Claim 33 is respectfully requested. Claim 33 is believed allowable over the cited references, alone or in any combination suggested by the art, in its recitation of receiving means, anchoring means, and means for decelerating a moving body in a controlled manner, the means for decelerating a moving body defined as:

means for decelerating the moving body in a controlled manner to thereby limit the deceleration thereof to below a predefined maximum deceleration level, the means for decelerating the moving body comprising at least one flexible, energy absorbing strap connected intermediate the receiving means and the anchoring means for receiving forces exerted longitudinally along the length of the strap upon impact by a moving body upon the receiving means, the strap being folded upon itself to form at least one loop of mutually adjacent, doubled lengths of strap, the mutually adjacent lengths of strap being stitched together by stitches formed through the mutually adjacent lengths of strap, the tensile strength of the stitches being less than that of the strap and being sufficiently low that they are ripped apart by the forces applied along the length of the strap by the moving body, the strap being of sufficient tensile strength to retain longitudinal continuity in the event the at least one loop is pulled apart upon the stitches being ripped apart by said longitudinal forces.

It is respectfully asserted that the combination of elements recited in newly added claim 33 is not shown or suggested in the cited art and provides important advantages not possible in the structures of the cited references. For example, the Uotila patent, No. 5,310,277, discloses a net structure requiring a multiplicity of interconnected braking devices, ropes, anchoring devices, etc., and includes no suggestion that a means for decelerating a moving body, such as a vehicle, could comprise a strap connected intermediate a receiving means (e.g., a net) and anchoring means, wherein the strap includes one or more stitched loops formed in the strap itself, and wherein the strap itself is of sufficient tensile strength to retain longitudinal continuity in the event one or more of the stitched loops formed in the strap are pulled apart by forces applied longitudinally along the strap. Instead, the Uotila system incorporates a plurality of ropes or cables connected at opposite ends of braking devices (4), (5), of various designs, and includes no teaching or suggestion that the ropes themselves could be stitched together to form braking devices or energy absorbing means. As shown

in Figures 5 and 6 of Uotila, the net (1) is integral with or is connected at opposite ends by a heavy rope or cable, or two such ropes, which in turn must be integral with or securely fastened between the net and the braking devices (4), which in turn are connected to additional ropes or cables that extend to and are connected to the anchoring vehicles. Although the ropes or cables, shown in the drawings, are not described in the Uotila patent, it may be assumed from the discussion at Column 1, line 60 et seq. that they are equivalent to, or the same as the "heavy rope" extending along the upper portion of the net. Another set of heavy ropes are connected to either end of another set of braking devices (5). Thus, the only braking devices shown or suggested in Uotila comprise commercial braking devices, which are independent of the heavy ropes or cables interconnecting them, whereby each of the braking devices (4),(5) must be securely connected at their respective end portions to a heavy rope, cable, or similar line of high strength capable of sustaining the heavy forces entailed in decelerating a vehicle. In some embodiments, these braking devices are apparently fastened at one of their ends to a heavy rope associated with the net itself. Thus, nothing in the art suggests the use of at least one energy absorbing strap connected between the anchor and the net, whereas the strap itself is capable of absorbing decelerative forces upon impact. Clearly, Applicant's claimed combination is of substantially simpler construction than that of the cited art (wherein multiple braking devices are required, each of which must be securely fastened to lengths of heavy rope) and therefore does not require the use of multiple braking devices, in addition to multiple heavy connecting ropes or line.

The subject matter recited in new Claim 33 is described in Applicant's specification, e.g., at page 3, lines 5-8, wherein it is disclosed that the net or mesh is secured to the anchors by energy absorbing straps, the straps providing a controlled resistance to the tensional loads over a predefined displacement or stroke, and at page 8, lines 1- 21, wherein the structure and process of deceleration of a moving object is described, and wherein it is disclosed that the strap is continuous and of sufficient load capacity ( $F_s$ ) that it will not break, even if the loops are ripped out (page 8, lines 11-15). Clearly, such structural relationships are not taught or suggested in the cited art, and they provide advantages in that a far simpler and obviously lighter rigging may be used, eliminating the need for separate, independent braking devices that must be securely fastened to multiple heavy



ropes, etc. Accordingly, it is respectfully contended that new Claim 33 is clearly distinguished over the cited art and should be allowed.

New Claim 34 is dependent upon Claim 33 and is believed to be allowable for essentially the same reasons provided above with respect to Claim 33. Claim 34 is further distinguished over the references in its recitation of stitches formed in a pattern extending “longitudinally along adjacent lengths of the strap.” Claim 33, of course, must be considered in context and in combination with parent Claim 33. It includes the limitations of Claim 33 in addition to the additional limitations those incorporated in Claim 34 itself. Thus, its claimed elements must be considered in combination with the limitations recited in Claim 33, e.g., wherein the strap is recited as comprising a flexible strap comprising means for sustaining longitudinal forces thereon and being of sufficient tensile strength to retain longitudinal continuity even in the event the at least one loop is pulled apart upon the stitches being ripped apart by longitudinal forces. Nothing in the cited art teaches or suggests such a combination of elements.

Claim 35 is dependent upon Claim 35 and is believed to be allowable for essentially the same reasons provided above with respect to Claims 33 and Claim 34. It is further distinguished over the references in its recitation of such a combination of elements in combination with newly recited limitations, as disclosed in Applicant’s specification at page 7, lines 11-15. As set forth at lines 19-21, the longitudinal stitches provide a smoother and more continuous release as the loop 12 is pulled apart. Again, the combination of elements set forth in Claim 35 and parent Claim 33 are not shown or suggested in the cited art, and the claim should be allowed.

Independent Claim 36 incorporates most of the limitations previously discussed with respect to Claim 33 and is believed allowable for essentially the same reasons provided above with respect to Claim 33. Claim 36 is additionally distinguished over the cited art in its recitation of an energy absorbing strap connected intermediate the means for receiving and retaining the moving body and the anchoring means, wherein the strap has a plurality of loops formed therein, each loop being stitched together by sacrificial stitching. Again, the strap itself, with its multiple stitched loops, comprises means for decelerating the moving body in a controlled body. This is clearly

distinguished from and in contrast with the structure of Uotila, wherein the multiple heavy ropes or lines merely serve to interconnect the various components, e.g., connect the braking devices to the net, and connect the braking devices to the anchors, etc. The multiple, energy absorbing loops permit greater stroke and, therefore, more flexibility in adjusting the levels of decelerative forces, as discussed in Applicant's specification at pages 9 and 10. For all of the above reasons, and also in view of the discussion hereinabove with respect to Claim 33, it is respectfully urged that Claim 36 should be allowed.

Claim 37 is dependent upon Claim 36 and is believed allowable for essentially the same reasons provided above with respect to Claim 36, and further in its recitation that the load capacity of the energy absorbing strap is expressed by the equation:

$$Load = Fr \cdot (Xm1 + Xm2 + Xm3 + \dots + Xmi)$$

wherein the energy absorbing stroke of each loop comprises the length of the respective stitched portion formed therein, and wherein the sum of  $Xm1$ ,  $Xm2$ ,  $Xm3$ , ...,  $Xmi$  represents the total stroke provided by the individual loops. (This structure and relationship is discussed in Applicant's specification at page 9, lines 5-11.) Nothing in the cited art teaches or suggests such a combination.

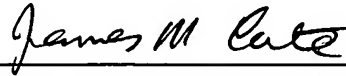
Claims 38 through 43 are dependent from Claim 37 and in combination with the elements of parent Claim 37 and its parent Claim 33, these new dependent claims are therefore believed allowable for essentially the same reasons provided with respect to Claim 37, and also those regarding parent Claim 33. Claims 38-43 are further distinguished over the cited art in their recitation of further modifications and advantageous relationships enabled by the use of the energy absorbing strap having multiple stitched loops, as discussed in Applicant's specification at pages 9 and 10.

New independent method Claim 44, and Claim 45, recite the process of applying the combination of elements of Claims 33 and 36, respectfully, and are believed allowable for essentially the same reasons. They are further considered allowable in that the claimed methods of decelerating a moving body are not shown or suggested in any of the cited art, alone or in any combination within the skill of the art.

CONCLUSION

For all of the foregoing reasons, Applicants request that the Examiner reconsider the rejection and allow all of the pending claims of the application. If the Examiner believes that an interview would facilitate resolving any outstanding issues, the Examiner is requested to contact the undersigned.

Respectfully submitted,



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**APPENDIX A****Marked-Up Claims**

1.(Amended) A deceleration-limiting barrier, comprising:

a net;

anchors; ~~and~~

a flexible strip arranged to secure the net to the anchors, with portions of the strip joined together in a manner as to be susceptible to being pulled apart under a load that is less than a load capacity of the strip, and

a first sacrificial panel adapted to hold up the net in a vertical position.

3.(Amended) The barrier of claim ~~1~~ 2, wherein the fasteners are stitched into the portions of the strip.

~~4. The barrier of claim 1, further comprising a first sacrificial panel adapted to hold up the net in a vertical position.~~

5.(Amended) The barrier of claim ~~[4]~~ 1, wherein the first sacrificial panel includes a smooth surface on one side.

6.(Amended) The barrier of claim ~~[4]~~ 1, further comprising a second sacrificial panel, the first and second sacrificial panels sandwiching the net therebetween.

10.(Amended) A barrier for limiting decelerating of a moving body, comprising:

means for receiving and retaining the moving body;

means for anchoring the receiving and retaining means; ~~and~~

means for decelerating the moving body in a controlled manner to thereby limit the deceleration thereof to below a predefined maximum deceleration level; and

a first sacrificial panel adapted to hold up the means for receiving and retaining the moving body.

~~11. The barrier of claim 10, further comprising means for holding up the receiving means in a vertical position.~~

14.(Amended) A deceleration-limiting roadway barrier system, comprising:

a first row of barriers positioned end-to-end alongside a roadway;  
a second row of barriers positioned end-to-end alongside the first row of barriers, the barriers of the first row being staggered from the barriers of the second row;  
a plurality of anchors fixedly mounted in the ground alongside the roadway; and  
each barrier comprising a net and one or more flexible strips arranged to secure the net to one or more anchors, with portions of each strip joined together in a manner as to be susceptible to being pulled apart under a load that is less than a load capacity of the strip; and  
a first sacrificial panel adapted to hold up the net in a vertical position.

~~15. The roadway barrier system of claim 14, wherein each barrier further comprises a first sacrificial panel adapted to hold up the net in a vertical position.~~

16.(Amended) The roadway barrier system of claim ~~15~~ 14, wherein the first sacrificial panel includes a smooth surface on one side.

17.(Amended) The roadway barrier system of claim ~~15~~ 14, wherein each barrier further comprises a second sacrificial panel, the first and second sacrificial panels sandwiching the net therebetween.

22. (Amended) A method of decelerating a moving body, comprising:

supporting a net with a first sacrificial panel that is also capable of deflecting moving bodies colliding tangentially therewith;

breaking away the first sacrificial panel;

receiving the moving body in ~~a~~the net;

deploying a plurality of energy absorbing straps attached to the net;

decelerating the moving body using the energy absorbing straps; and

limiting the deceleration of the moving body to below a predefined maximum deceleration level.

~~23. The method of claim 22, further comprising supporting the net with a first sacrificial panel that is also capable of deflecting moving bodies colliding tangentially therewith.~~

24. (Amended) The method of claim ~~23~~ 22, further comprising sandwiching the net between the first sacrificial panel and a second sacrificial panel.

29. (New) The deceleration-limiting barrier of claim 6 wherein the first and second sacrificial panels are made of a thin layer of epoxy, concrete or plywood, or combinations thereof.

30. (New) The barrier of claim 10 wherein the first sacrificial panel is made of a thin layer of epoxy, concrete or plywood, or combinations thereof.

31. (New) The deceleration-limiting roadway barrier system of claim 17 wherein the first and second sacrificial panels are made of a thin layer of epoxy, concrete or plywood, or combinations thereof.

32. (New) The method of claim 22 wherein the first and second sacrificial panels are made of a thin layer of epoxy, concrete or plywood, or combinations thereof.

33. (New) A barrier for decelerating a moving body, comprising:

receiving means for receiving and retaining the moving body upon the moving body impacting against the receiving means, the moving body comprising means imparting forces against the receiving means upon impact by a moving body;

anchoring means for anchoring the receiving means;

means for decelerating the moving body in a controlled manner to thereby limit the deceleration thereof to below a predefined maximum deceleration level, the means for decelerating the moving body comprising at least one flexible, energy absorbing strap connected intermediate the receiving means and the anchoring means for receiving forces exerted longitudinally along the length of the strap upon impact by a moving body upon the receiving means, the strap being folded upon itself to form at least one loop of mutually adjacent, doubled lengths of strap, the mutually adjacent lengths of strap being stitched together by stitches formed through the mutually adjacent lengths of strap, the tensile strength of the stitches being less than that of the strap and being sufficiently low that they are ripped apart by the forces applied along the length of the strap by the moving body, the strap being of sufficient tensile strength to retain longitudinal continuity in the event the at least one loop is pulled apart upon the stitches being ripped apart by said longitudinal forces.

34. (New) The barrier of Claim 33, wherein the stitches are formed in a pattern extending longitudinally along the adjacent lengths of strap, whereby the stitches are ripped apart sequentially upon the application of forces along the length of the strap.

35. (New) The barrier of Claim 33, wherein the stitches extend longitudinally along the adjacent lengths of strap.

36. (New) A barrier for decelerating a moving body, comprising:

means for receiving and retaining the moving body;

means for anchoring the receiving and retaining means;

means for decelerating the moving body in a controlled manner to thereby limit the deceleration thereof to below a predefined maximum deceleration level, the means for decelerating the moving body comprising at least one flexible, energy absorbing strap connected intermediate the

means for receiving and retaining the moving body and the means for anchoring the receiving and retaining means, the strap having a plurality of loops formed therein and mutually spaced along the strap, each loop being formed of mutually adjacent lengths of the strap stitched together by sacrificial stitching formed between the mutually adjacent lengths of strap and defining stitched portions in the respective loops, the tensile strength of the strap being greater than that of the stitches.

37. (New) The barrier of Claim 36, wherein the load capacity of the energy absorbing strap is expressed by the equation:

$$\text{Load} = Fr \cdot (Xm1 + Xm2 + Xm3 + \dots + Xmi)$$

wherein the energy absorbing stroke of each loop comprises the length of the respective stitched portion formed therein, and wherein the sum of  $Xm1$ ,  $Xm2$ ,  $Xm3$ , ...,  $Xmi$  represents the total stroke provided by the individual loops.

38. (New) The barrier of Claim 37, wherein the strokes of each loop are identical.

39. (New) The barrier of Claim 37, wherein the strokes of each of the respective loops are not identical.

40. (New) The barrier of Claim 37, wherein the load capacities of the loops differ.

41. (New) The barrier of Claim 40, the loops comprising means for applying successive decelerative forces upon a moving body impinging upon the means for receiving and retaining the moving body as the loops are ripped apart, the stitches of at least one of the loops being of greater tensile strength



than those of at least one other loop, whereby the decelerative forces applied by the loop having stitches of greater tensile strength are greater than those applied by the at least one other loop.

42. (New) The barrier of Claim 41, wherein the energy absorbing strap comprises means for applying decelerative forces upon a moving body impinging upon the means for receiving and retaining the moving body as the loops are successively ripped apart.

43. (New) The barrier of Claim 40, wherein the energy absorbing strap comprises means for applying successively greater decelerative forces upon a moving body impinging upon the receiving means upon loops of successively greater load capacity being ripped apart.

44. (New) A method of decelerating a moving body, comprising:

providing a means for receiving and retaining the moving body;

deploying a plurality of energy absorbing straps attached to the means for receiving and retaining the moving body, each of the energy absorbing straps being folded upon itself to form one or more loops of mutually adjacent, doubled lengths of strap, the mutually adjacent lengths of strap being stitched together by stitches formed through the mutually adjacent lengths of strap, the tensile strength of the straps being greater than that of the stitches, the stitches being formed along at least part of the lengths of the mutually adjacent lengths of strap;

receiving the moving body in the means for receiving and retaining the moving body;

decelerating the moving body by resistance provided by the stitches as they are ripped apart upon impact from the moving body ; and

limiting the deceleration of the moving body to below a predefined maximum deceleration level, the step of limiting the deceleration of the moving body including providing stitches of tensile strength less than the decelerative forces transmitted to the energy absorbing straps by the moving body.

45. (New) The method of decelerating a moving body of Claim 44, comprising providing multiple loops in each energy absorbing strap, the loops being mutually spaced along the length of each strap,

and wherein the method of decelerating a moving vehicle comprises decelerating the moving body by resistance provided by the stitches of one or more of the multiple loops as they are ripped apart as forces are exerted along the length of the strap.